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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,249	12/21/2000	Earl W. McCune JR.	101221EPD.US	9877

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EXAMINER

BENSON, WALTER

ART UNIT PAPER NUMBER

2858

DATE MAILED: 02/04/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/746,249

Applicant(s)

Earl McMune

Examiner

Walter Benson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Dec 21, 2000 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some\* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

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### **DETAILED ACTION**

1. Claims 1-9 are presented for examination.

#### ***Drawings***

2. The drawings are objected to because of the following:  
  
item 810 is not shown in figure 8;  
  
item 1001 appears to be mislabeled based on the description in the specification page 6,  
  
lines 18-19. Correction is required.

#### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1-2, and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Rogers (US Patent No. 5,220,293 and Rogers hereinafter).

5. As to claims 1 and 5, Rogers discloses an apparatus and method of measuring the phase or frequency of a periodic input signal using a periodic reference signal, comprising:

comparing the input signal to the reference signal to obtain a lead signal or a lag signal (col. 4, lines 9-11);

changing the count of an up/down counter in dependence on the input signal, the reference signal, the lead signal and the lag signal (col. 7, lines 64-65);

using the lead signal, the lag signal and the count signal to produce a phase or frequency output (col. 7, lines 66-68 and col. 8, lines 1-5).

6. As to claims 2 and 6, Rogers discloses an apparatus and method of measuring the phase or frequency of a periodic input signal using a periodic reference signal, comprising:

where producing a phase or frequency signal comprises using the lead signal and the lag signal to form a difference signal, and filtering the difference signal to produce an aliased signal (col. 4, lines 11-22).

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*Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-4 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rogers (US Patent No. 5,220,293 and Rogers hereinafter) in view of Kanterakis et al. (US Patent No. 6,021,157 and Kanterakis hereinafter).

Although the system disclosed by Rogers shows substantial features of the claimed invention (discussed above), it fails to disclose:

adding to the aliased output signal a correction signal representing a positive or negative increment to form an unwrapped output signal [claims 3 and 7].

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Rogers, as evidenced by Kanterakis.

In an analogous art, Kanterakis discloses an apparatus and method for phase estimation in digital communication systems having:

adding to the aliased output signal a correction signal representing a positive or negative increment to form an unwrapped output signal (Fig. 4; col. 6, lines 46-50).

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Given the teaching of Kanterakis, a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Rogers by employing the well known or conventional features of a demodulation system, such as disclosed by Kanterakis, in order to provide for faster synchronization over the spectrum.

9. As to claims 4 and 8, Rogers discloses an apparatus and method of measuring the phase or frequency of a periodic input signal using a periodic reference signal, comprising:

where the correction signal is formed using the count of the up/down counter (Fig. 4; col. 6, lines 46-50).

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rogers and Kanterakis as applied to claims 5 and 8 above, and further in view of Pickering et al. (US Patent No. 6,107,848 and Pickering hereinafter).

Although the combine teaching by Rogers and Kanterakis shows substantial features of the claimed invention (discussed above), it fails to disclose:

where the circuitry for forming the correction signal comprises a multiplier having as one input signal a constant value and having as another input signal the count of the up/down counter.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Rogers in view of Kanterakis, as evidenced by Pickering.

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In an analogous art, Pickering discloses a phase synchronization apparatus and method having:

circuitry for forming the correction signal comprises a multiplier having as one input signal a constant value and having as another input signal the count of the up/down counter (Fig. 6; col. 6, lines 34-46).

Given the teaching of Pickering, a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Rogers in view of Kanterakis by employing the well known or conventional features of a demodulation apparatus, such as disclosed by Pickering, in order to provide for synchronization of input signals of different frequencies.

#### **Prior Art Made of Record**

11. A. Myers (US Patent No. 6,163,209) discloses a method and apparatus for demodulation of angle modulated carriers using a noncoherent reference;

B. Wildhagen (US Patent No. 6,075,410) discloses an apparatus and method for digitally demodulating a frequency modulated signal;

C. Hill. (US 2002/000800 A1) discloses a system and method for precise digital frequency detection.

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***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter Benson whose telephone number is (703) 306-4525. The examiner can normally be reached on Monday to Thursday and alternate Fridays from 6:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le, can be reached on (703) 308-0750. The fax phone number for the organization where this application or proceeding is assigned is (703) 30-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800.

Walter Benson/  
Patent Examiner

January 30, 2002



**N. Le**  
**Supervisory Patent Examiner**  
**Technology Center 2800**